

## CLAIMS

1. A process for producing a polymer, which comprises a step of carrying out photopolymerization of at least one photopolymerizable polymerization precursor containing a photocurable compound having two or more unsaturated bonds by irradiation with active energy ray in a supercritical fluid or subcritical fluid to produce a polymer having juts.

2. The process for producing a polymer according to Claim 1, wherein the supercritical fluid or subcritical fluid is supercritical carbon dioxide or subcritical carbon dioxide.

3. The process for producing a polymer according to Claim 1, wherein the polymer having juts is formed on an active energy ray-permeable base material so disposed as to be exposed to the supercritical fluid or subcritical fluid.

4. The process for producing a polymer according to Claim 3, wherein the active energy ray-permeable base material is so disposed that an incident surface for active energy ray of the base material is not exposed to the supercritical fluid nor subcritical fluid, and the exiting surface for active energy ray of the base material is exposed to the supercritical fluid or subcritical fluid, and,

the photopolymerization of at least one photopolymerizable polymerization precursor containing the photocurable compound having two or more unsaturated bonds is carried out by irradiation with active energy ray while permeating through the active energy ray-permeable base material to form the polymer having juts on the exiting surface for active energy ray of the active energy ray-permeable base material.

5. The process for producing a polymer according to Claim 4, wherein the irradiation with active energy ray onto the active energy ray-permeable base material is conducted via a mask pattern to selectively form the polymer having juts on a part of the exiting surface for active energy ray of the active energy ray-permeable base

material wherein the active energy ray was permeated through the part.

6. A process for producing a polymer, which comprises a step of carrying out photopolymerization of at least one photopolymerizable polymerization precursor containing a photocurable compound having two or more unsaturated bonds by irradiation with active energy ray in a supercritical fluid or subcritical fluid in the presence of at least one additive component for adding a polymer function to produce a polymer having juts containing the additive component.

7. The process for producing a polymer according to Claim 6, wherein the additive component is at least one organometal complex.

8. The process for producing a polymer according to Claim 7, wherein the additive component is at least one organoplatinum complex.

9. A polymer having juts wherein the height of juts is 0.1-fold or more of the diameter of the juts and the height of juts is 10 nm or more.

10. The polymer according to Claim 9, wherein the height of juts is 1-fold or more of the diameter of the juts.

11. The polymer according to Claim 9, wherein the height of juts is 1  $\mu\text{m}$  or more.

12. The polymer according to Claim 9, which has a water-repellant function.

13. The polymer having juts according to Claim 12, wherein the contact angle with water is  $90^\circ$  or more.

14. A structure containing the polymer having juts according to Claim 9 on a base material.

15. A polymer having juts, which contains at least one additive component for adding a polymer function.

16. The polymer according to Claim 15, wherein the height of juts is 0.1-fold or more of the diameter of the juts and the height of juts is 10 nm or more.

17. A structure containing the polymer having juts according to Claim 15 on a

base material.

18. The polymer according to Claim 15, wherein the additive component is at least one organometal complex.

19. A polymer having juts and containing a metal and/or metal oxide, which  
5 was produced by reducing treatment of the polymer having juts according to Claim 18.

20. A membrane containing a metal and/or metal oxide as a main component, which was produced by calcining treatment of the polymer having juts according to Claim 18.